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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,873	07/09/2001	Clifton T. Knight	70055	5953

7590 03/29/2004

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EXAMINER	
DEL SOLE, JOSEPH S	
ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/901,873	KNIGHT ET AL.	
	Examiner	Art Unit	
	Joseph S. Del Sole	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *9 and 19-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/6/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 9 and 19-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the Paper of 1/27/04. The traversal is on the ground(s) that the inventions of claims 8 and 9 have many features in common so that a single search would be beneficial and further the apparatus can not be used to practice a materially different process. This is not found persuasive because the search of claim 9 would involve a search for computation fluid dynamics modeling that is not necessary for the search of claim 8 and further because the apparatus can be used to practice a materially different process -- as set forth previously the apparatus can be used to extrude and penalize a foamed polymer with a fractured surface.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities: **a)** at page 9, line 16, "line III-III of Figure 2" should be changed to "line A-A of Figure 2-- in order to properly match that which is drawn; and **b)** the terminology used in the claims is not always the same as the terminology used in the "Description of the Preferred Embodiment" section of the specification, for instance the features "heating medium conduit" and "transition zone conduit" should be included with the appropriate reference numerals.

Appropriate correction is required.

Claim Objections

3. Claims 1, 6 and 17 are objected to because of the following informalities: **a)** at line 6 of claim 1 "to form a extrusion orifice section;" should be changed to --to form an extrusion orifice section;-- for grammatical correctness; **b)** at line 13 of claim 1 "just as the polymer exists" should be changed to --just as the polymer exits-- to correct a misspelling; **c)** claim 1 must conclude with a period ".", and therefore "the extrusion orifice" on the last line should be changed to --the extrusion orifice.--; **d)** the period "." missing from claim 1 appears to have found its way to the end of claim 6 and therefore "transfer characteristics.." on the last line of claim 6 should be changed to --transfer characteristics.--; **e)** at line 6 of claim 17 "to form a extrusion orifice section;" should be changed to --to form an extrusion orifice section;-- for grammatical correctness. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-7and 10-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Swickard et al (3,461,495).

Swickard et al teach:

claims 1-7: a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); heating medium conduits (Fig 5, #50) forming a heating medium system, the heating medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Fig 5); a thermal stabilization cavity (Fig 5, #70) adjacent to each extrusion orifice in an associated one of the extrusion orifice sections, the thermal stabilization cavity defining a thermal stabilization zone between the die ext side exposed to cooling fluid and the heating medium conduits to allow the polymer to remain in a liquid state up to solidification just as the polymer exits the extrusion orifice (Fig 5); the thermal stabilization cavity includes a space surrounding each extrusion orifice at a location inwardly of the die exit side to provide thermal stabilization from the cooling effects of the cooling fluid, the thermal stabilization cavity includes a space extending between each extrusion orifice section at a location inwardly of the die ext side to provide thermal stabilization from the cooling effects of the cooling fluid, the thermal stabilization cavity includes a space extending substantially circumferentially between each extrusion orifice section at a location inwardly of the die exit side to

provide thermal stabilization from the cooling effects of the cooling fluid, and the thermal stabilization cavity includes a space extending substantially radially between each extrusion orifice within each extrusion orifice section at a location inwardly of the die exit side to provide thermal stabilization from the cooling effects of the cooling fluid (Figs 1, 2 and 5, #70, col 4, lines 23-26, the insulation #70 is in a continuous cavity that achieves each of these structural relationships); the thermal stabilization cavity is filled with a heat transfer media that provides good heat transfer characteristics and the thermal stabilization cavity transports heat through a convective, radiative and conductive medium (col 4, lines 23-26, the Examiner notes that the claims do not define what makes a media a heat transfer media or a good heat transfer media);

claims 10-16: a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); a heating medium system with a heating medium conduit (Fig 5, #50) adjacent to each polymer channel for heating the polymer channel including a transition zone conduit between adjacent channels and adjacent to the transition zone of each extrusion orifices for heating polymer in each extrusion orifice (Fig 5, #50 extends continuously between the polymer channel, the extrusion orifice and the transition zone therebetween); the heating medium system includes a heating medium conduit radially outwardly (Fig 3, #s 35 and 34) of each extrusion orifices section and adjacent to each

of the channels; the heating medium system includes a heating medium conduit radially inwardly (Fig 3, #s 40 and 80) of each extrusion orifice section and adjacent to each of the channels; the heating medium system includes another heating medium conduit between adjacent channels (Figs 3 and 5); the heating medium system includes a supply heating medium conduit radially outwardly of each extrusion orifice section and adjacent to each of said channels (Fig 3, #s 35 and 34), the supply heating medium conduit being connected to the transition zone conduits for supplying heating medium to the transition zone conduits (Fig 3), additional heating medium conduits between adjacent channels and an intermediate heating medium conduit radially inwardly of each extrusion orifice section and adjacent to each of the channels (Fig 5), the intermediate heating medium conduit being connected to the transition zone conduits and being connected to the additional heating medium conduits for transferring heating medium between the transition zone conduits and the additional heating medium conduits for even heat distribution to the polymer based on once in and once out heating medium flow (Figs 3 and 5); the supply conduits is an inlet header (Fig 3, #s 40 and 80) extending circumferentially about the polymer channels to provide essentially equal pressure and flow to the entry of each of the transition zone channels and with a discharge header (Fig 3, #s 34 and 35) extending circumferentially about the polymer channels and connected to each of the additional channels, the discharge header having a geometry to provide equal flow and pressure drop across each of the additional channels; and a thermal stabilization cavity (Fig 5, #70) adjacent to each extrusion orifice in an associated extrusion orifice section, the thermal stabilization

cavity defining a thermal stabilization zone between the die exit side exposed to cooling fluid and the heating medium conduits allowing polymer to remain in a liquid state up to solidification just as the polymer exits the extrusion orifice.

6. Claims 10-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshii et al (6,638,045).

Yoshii et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (Fig 2) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 3, #s 2 and 5b); a plurality of extrusion orifices (Fig 3, #s 5a and 7) connected to a respective one of the polymer channels to form an extrusion orifice section (Fig 1); a heating medium system with a heating medium conduit (Fig 2, #8) adjacent to each polymer channel for heating the polymer channel including a transition zone conduit between adjacent channels and adjacent to the transition zone of each extrusion orifices for heating polymer in each extrusion orifice (Figs 1-3, #8 extends continuously between the polymer channel, the extrusion orifice and the transition zone therebetween); the heating medium system includes a heating medium conduit radially outwardly (Fig 2, #9) of each extrusion orifices section and adjacent to each of the channels; the heating medium system includes a heating medium conduit radially inwardly (Fig 2, #10) of each extrusion orifice section and adjacent to each of the channels; the heating medium system includes another heating medium conduit between adjacent channels (Figs 1 and 3); the heating medium system includes a supply heating medium conduit radially outwardly of each extrusion orifice section and

adjacent to each of said channels (Fig 2, #9), the supply heating medium conduit being connected to the transition zone conduits for supplying heating medium to the transition zone conduits (Fig 3), additional heating medium conduits between adjacent channels and an intermediate heating medium conduit radially inwardly of each extrusion orifice section and adjacent to each of the channels (Fig 4), the intermediate heating medium conduit being connected to the transition zone conduits and being connected to the additional heating medium conduits for transferring heating medium between the transition zone conduits and the additional heating medium conduits for even heat distribution to the polymer based on once in and once out heating medium flow (Fig 2); and the supply conduit is an inlet header (Fig 2, #9) extending circumferentially about the polymer channels to provide essentially equal pressure and flow to the entry of each of the transition zone channels and with a discharge header (Fig 2, #10) extending circumferentially about the polymer channels and connected to each of the additional channels, the discharge header having a geometry to provide equal flow and pressure drop across each of the additional channels.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swickard et al (3,461,495).

Swickard et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); heating medium conduits (Fig 5, #50) forming a heating medium system, the heating

medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Fig 5); and a polymer channel to extrusion orifice transition zone (Fig 5, #60) to prevent melt-fracture including a polymer channel connected to each said extrusion orifices (Fig 5).

The Examiner notes that the limitation "taking into account specific polymer characteristics with appropriate geometries, pressures, and flow rates that will allow maximum production and eliminate melt fracture of the particular polymer and assure the proper thermal transition of the polymer for maximum pellet quality" is a process limitation that attempts to limit the structure of the apparatus by claiming the conditions that must be met during production with the apparatus. While the reference does not explicitly discuss attention to such specific conditions, it is obvious that the apparatus of Swickard can be operated to achieve such conditions. The claim fails to recite specific structural limitations that differentiate the claimed apparatus from the apparatus of the prior art.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii et al (6,638,045).

Yoshii et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (Fig 2) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 3, #s 2 and 5b); a plurality of extrusion orifices (Fig 3, #s 5a and 7) connected to a respective one of the polymer channels to form an extrusion orifice section (Fig 1); heating medium conduits (Fig 2, #8) forming a heating medium system, the heating

medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Figs 1-3); and a polymer channel to extrusion orifice transition zone (Fig 3) to prevent melt-fracture including a polymer channel connected to each said extrusion orifices (Fig 3, #5b).

The Examiner notes that the limitation "taking into account specific polymer characteristics with appropriate geometries, pressures, and flow rates that will allow maximum production and eliminate melt fracture of the particular polymer and assure the proper thermal transition of the polymer for maximum pellet quality" is a process limitation that attempts to limit the structure of the apparatus by claiming the conditions that must be met during production with the apparatus. While the reference does not explicitly discuss attention to such specific conditions, it is obvious that the apparatus of Swickard can be operated to achieve such conditions. The claim fails to recite specific structural limitations that differentiate the claimed apparatus from the apparatus of the prior art.

12. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii et al (6,638,045) in view of Mallay (4,167,386).

Yoshii et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (Fig 2) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 3, #s 2 and 5b); a plurality of extrusion orifices (Fig 3, #s 5a and 7) connected to a respective one of the polymer channels to form an extrusion orifice section (Fig 1); a heating medium system with a heating medium conduit (Fig 2, #8) adjacent to each

polymer channel for heating the polymer channel; a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 3, #6), the raised ring is a hardened face (col 4, lines 50-55).

Yoshii et al fail to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Mallay teaches a coating of tungsten carbide (tungsten carbide has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant.

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Yoshii et al with a surface face being a coating of tungsten carbide as taught by Mallay because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

Further regarding the thickness of the face begin less than 1mm, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Still further, a dimension of 1mm would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

13. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii et al (6,638,045) in view of Hamilton (3,847,530).

Yoshii et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (Fig 2) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 3, #s 2 and 5b); a plurality of extrusion orifices (Fig 3, #s 5a and 7) connected to a respective one of the polymer channels to form an extrusion orifice section (Fig 1); a heating medium system with a heating medium conduit (Fig 2, #8) adjacent to each polymer channel for heating the polymer channel; a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 3, #6), the raised ring is a hardened face (col 4, lines 50-55).

Yoshii et al fail to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Hamilton teaches a coating of ceramic (ceramic has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant (col 4, line 31 - col 5, line 7).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Yoshii et al with a surface face being a coating of ceramic as taught by Hamilton because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

Further regarding the thickness of the face begin less than 1mm, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469

U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Still further, a dimension of 1mm would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

14. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii et al (6,638,045) in view of Wolfe, Jr (4,378,964).

Yoshii et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (Fig 2) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 3, #s 2 and 5b); a plurality of extrusion orifices (Fig 3, #s 5a and 7) connected to a respective one of the polymer channels to form an extrusion orifice section (Fig 1); a heating medium system with a heating medium conduit (Fig 2, #8) adjacent to each polymer channel for heating the polymer channel; a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 3, #6), the raised ring is a hardened face (col 4, lines 50-55).

Yoshii et al fail to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Wolfe, Jr teaches a brazed coating of tungsten carbide (tungsten carbide has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant (col 5, lines 5-10).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Yoshii et al with a surface face being a coating of tungsten carbide as taught by Wolfe, Jr because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

Further regarding the thickness of the face begin less than 1mm, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Still further, a dimension of 1mm would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

15. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swickard et al (3,461,495) in view of Mallay (4,167,386).

Swickard et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a

respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); heating medium conduits (Fig 5, #50) forming a heating medium system, the heating medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Fig 5); a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 5, #66), the raised ring is a hardened face(col 4, lines 16-26); and a thermal stabilization cavity (Fig 5, #70) adjacent to each extrusion orifice in an associated extrusion orifice section, the thermal stabilization cavity defining a thermal stabilization zone between the die exit side exposed to cooling fluid and the heating medium conduits allowing polymer to remain in a liquid state up to solidification just as the polymer exits the extrusion orifice.

Swickard fails to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Mallay teaches a coating of tungsten carbide (tungsten carbide has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant.

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Swickard et al with a surface face being a coating of tungsten carbide as taught by Mallay because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

Further regarding the thickness of the face begin less than 1mm, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference

between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Still further, a dimension of 1mm would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

16. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swickard et al (3,461,495) in view of Hamilton (3,847,530).

Swickard et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); heating medium conduits (Fig 5, #50) forming a heating medium system, the heating medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Fig 5); a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 5, #66), the raised ring is a hardened face(col 4, lines 16-26); and a thermal stabilization cavity (Fig 5, #70) adjacent to each extrusion orifice in an associated extrusion orifice section, the thermal stabilization cavity defining a thermal stabilization zone between the die exit side exposed to cooling fluid and the heating medium conduits allowing polymer to remain in a liquid state up to solidification just as the polymer exits the extrusion orifice.

Swickard fails to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Hamilton teaches a coating of ceramic (ceramic has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant (col 4, line 31 - col 5, line 7).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Swickard et al with a surface face being a coating of ceramic as taught by Hamilton because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

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17. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swickard et al (3,461,495) in view of Wolfe, Jr (4,378,964).

Swickard et al teach a pelletizing die (Fig 1) having a pelletizing die member with a die exit side exposed to cooling fluid (col 2, lines 1-21 and col 4, lines 23-26) and a die

entry side for receiving polymer fed thereto (Fig 2), the pelletizing die member having a plurality of polymer channels (Fig 5, #61); a plurality of extrusion orifices connected to a respective one of the polymer channels to form an extrusion orifice section (Figs 1 and 3); heating medium conduits (Fig 5, #50) forming a heating medium system, the heating medium conduits including at least one conduit adjacent to each polymer channel for heating the polymer channel (Fig 5); a raised extrusion orifice ring encompassing the extrusion orifice sections (Fig 5, #66), the raised ring is a hardened face(col 4, lines 16-26); and a thermal stabilization cavity (Fig 5, #70) adjacent to each extrusion orifice in an associated extrusion orifice section, the thermal stabilization cavity defining a thermal stabilization zone between the die exit side exposed to cooling fluid and the heating medium conduits allowing polymer to remain in a liquid state up to solidification just as the polymer exits the extrusion orifice.

Swickard fails to teach the hardened face coated, having a thickness of less than 1mm and having a hardness level greater than 800HV01.

Wolfe, Jr teaches a brazed coating of tungsten carbide (tungsten carbide has a hardness level greater than 800HV01) for the purpose of making the die face of a cutter abrasion resistant (col 5, lines 5-10).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Swickard et al with a surface face being a coating of tungsten carbide as taught by Wolfe, Jr because it has a hardness level greater than 800HV01 thus making the die face abrasion resistant.

Further regarding the thickness of the face begin less than 1mm, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Still further, a dimension of 1mm would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

References of Interest

18. Data from Handbook of Refractory Carbides and Nitrides is cited to show properties of Tungsten Carbide.

Correspondence

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Joseph S. Del Sole whose telephone number is (571) 272-1130. The examiner can normally be reached on Monday through Friday from 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Wanda Walker, can be reached at (571) 272-1151. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for both non-after finals and for after finals.

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Joseph S. Del Sole

J.S.D.
March 22, 2004